



Industrial Sector Energy Intensity Trends and Projections

How did we get here and where are we going?

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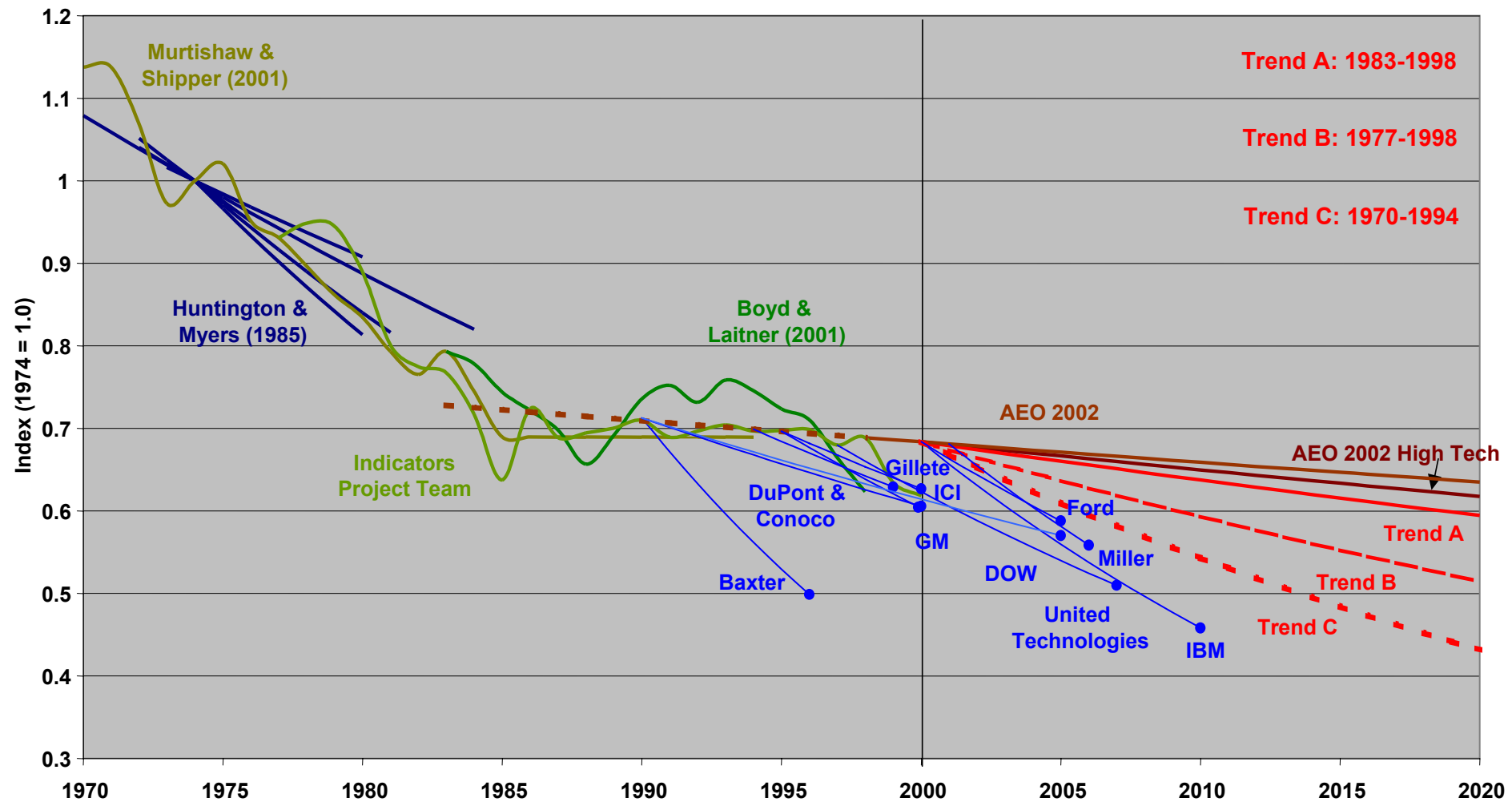
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Industry Mix and Energy Intensity has Changed and will Continue to Change

- **Long view: Past thirty years**
 - The changing mix of industrial activity has *generally* contributed to lower aggregate growth in energy use
 - Energy intensive sectors growth is slower than the economy
 - New, less energy intensive industries have emerged
 - “Real” (adjusted) primary energy intensity has declined
 - “Real” (adjusted) electric intensity rose until mid eighties
- **Recent trends: Past ten years**
 - High growth in less intensive IT sectors resulted in lower intensity
 - “Real” (adjusted) primary energy intensity has been stable
 - “Real” (adjusted) electric intensity has also been stable



Real Manufacturing Energy Intensity (Adjusted for Changes in Structural Shift)



Even If We Know How We Got Here, Does That Tell Us Where We're Going?

- **Are the energy intensity changes of the past “replicable”?**
 - **Market conditions**
 - **Technology**
 - **Policy Environment**
- **Are firms using “best practice” or advancing the frontier?**
 - **Dynamics of competition and resulting technology use**
 - **New plants, retrofit, or retirements**
- **What underlies the apparent end of “electrification”?**
 - **Maturation of electric penetration**
 - **Offsetting trend in efficiency**
- **How is energy use related to productivity?**